UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,181	05/22/2006	Martin Hofmeister	01012-1043	4039

30671 7590 03/20/2009

DITTHAVONG MORI & STEINER, P.C.
918 Prince St.
Alexandria, VA 22314

EXAMINER	
STEVENS, BRIAN J	
ART UNIT	**PAPER NUMBER**
2611	
MAIL DATE	**DELIVERY MODE**
03/20/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,181	HOFMEISTER ET AL.	
	Examiner	Art Unit	
	Brian J. Stevens	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 11-13* is/are rejected.

7)☒ Claim(s) *4-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed May 22nd, 2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Allowable Subject Matter

2. Claims 4-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Objections

3. Claims 11 and 12 is objected to because of the following informalities: "a impulse response" should be "an impulse response". Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 3, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap

between the steps. See MPEP § 2172.01. The omitted steps are: how to determine the transmission function stated in the first limitation line and what function it is.

6. Claims 3, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: when the "summated impulse response" is performed.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by US 5,689,808 by Sandahl et al.

9. Regarding claim 1, Sandahl teaches A method for monitoring stability of a carrier frequency of identical transmitted signals of several transmitters of a single-frequency network by comprising:

receiving, by a receiver device (See Figure 1, [76]) positioned within the transmission range of the single frequency network (See Column 3, Lines 20-48, "Each of the plurality of transmitters is connected to the network unit to receive the signal from

the network control unit which is simulcast via a radio broadcast containing the signal at a frequency controlled by the timing information" and "The receiver is located to receive the simulcast radio broadcasts", thus the same single frequency and within range to receive the signal), a signal associated with a transmitted signal of a transmitter (See Column 3, Lines 20-48, "The receiver is located to receive the simulcast radio broadcasts") and a reference signal of a reference transmitter (See Column 3, Lines 59-67, "wherein the timebase at the remote transmitters and the network monitoring units are each individually derived from the high stability clock reference at the network controller unit", where the "timebase" being the reference signal); and

evaluating a phase position of the received signal associated with a the transmitted signal of the transmitter with reference to the received signal of the reference transmitter (See Column 4, Lines 6-14, "sending an adjustment signal to the network controller unit in response to the detection of the phase difference between the timebase at the network monitoring unit and the timebase at the transmitter being monitored").

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,689,808 by Sandahl et al., in view of US 2002/0126046 A1 by Counselman, III et al.

12. Regarding claim 2, Sandahl taught the method according to claim 1, as described above, but does not teach further comprising:

calculating a carrier-frequency displacement of a carrier frequency of a transmitter relative to a reference carrier frequency of the reference transmitter from a phase-displacement difference caused by the carrier-frequency displacement of this transmitter between a phase displacement at least at one second observation time and a phase displacement at a first observation time of a received signal of this transmitter associated with the transmitted signal relative to a received signal of the reference transmitter associated with the transmitted signal.

Counselman teaches the knowledge of calculating a carrier frequency displacement caused by the phase of the received signals of all the transmitters in reference to the reference signal at different time points (See Paragraph [0070], "at reference station 40 the amplitudes, frequencies, and phases of the carrier waves received from all available transmitters 30 are measured at times governed by clock 452", where the "reference transmitter" being the clock within the reference station), is well known in the art.

13. It would have been obvious to one of ordinary skill in the art having the teachings of Sandahl and Counselman before them at the time the invention was made to modify the method of Sandahl to further include calculating a carrier-frequency displacement of a carrier frequency of a transmitter relative to a reference carrier frequency of the

reference transmitter from a phase-displacement difference caused by the carrier-frequency displacement of this transmitter between a phase displacement at least at one second observation time and a phase displacement at a first observation time of a received signal of this transmitter associated with the transmitted signal relative to a received signal of the reference transmitter associated with the transmitted signal. There a finite amount of ways to determine the carrier-frequency offset between a received signal and a reference signal, one would be motivated to try determining the phase offset of signal in order to determine the carrier-frequency offset. One or ordinary skill in the art would therefore have been motivated to make the modification to further include calculating a carrier-frequency displacement of a carrier frequency of a transmitter relative to a reference carrier frequency of the reference transmitter from a phase-displacement difference caused by the carrier-frequency displacement of this transmitter between a phase displacement at least at one second observation time and a phase displacement at a first observation time of a received signal of this transmitter associated with the transmitted signal relative to a received signal of the reference transmitter associated with the transmitted signal.

14. Claim 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,689,808 by Sandahl et al., in view of US 2002/0122210 A1 by Mitchell Illbery.

15. Regarding claim 11, Sandahl teaches a device for monitoring the stability of the carrier frequency of identical transmitted signals of several transmitters of a single-frequency network comprising:

a receiver device (See Figure 1, [76]),

a unit for determining a transmission function (See Figure 1, [82]) of a transmission channel of several transmitters (See Figure 1, the sever transmitters being [50], [52] and [54]) of the single-frequency network to the receiver device disposed within the transmission range of the single-frequency network (See Column 3, Lines 20-48, "The receiver is located to receive the simulcast radio broadcasts"), but does not teach

a unit for implementing an inverse Fourier transform, and a unit for masking a impulse response for every transmitter from the summated impulse response.

Sandahl further teaches a unit for determining the phase characteristic of the impulse response for every transmitter (See Figure 1, [82], also see Column 4, Lines 6-14, "sending an adjustment signal to the network controller unit in response to the detection of the phase difference between the timebase at the network monitoring unit and the timebase at the transmitter being monitored", thus the phase characteristics must be found first before finding the difference),

a unit for calculating the phase-displacement difference (See Figure 1, [82]) of the phase displacement of a transmitter relative to a reference transmitter at least at two different times and the carrier-frequency displacement of every transmitter relative to the carrier frequency of the reference transmitter (See Column 4, Lines 6-14, "sending an adjustment signal to the network controller unit in response to the detection of the phase difference between the timebase at the network monitoring unit and the timebase at the transmitter being monitored", where the adjustment signal is used to correct for

the found "phase-displacement difference" of the received signals and the reference signal), but does not teach

a unit for presenting the calculated carrier-frequency (See Figure 1, [32], [34] and [36]) displacement of every transmitter relative to the carrier frequency of the reference transmitter of the single-frequency network (See Column 9, 54-61, “Using the phase-locked modulation Timebase as the reference for the radio transmitter synthesizer assures precise frequency control”, where the NIUs use the signal to correct for the carrier-frequency displacement to each transmitters which was fed back via Line [88] in Figure 1), is well known in the art.

Mitchell Illbery teaches the knowledge of having a unit for performing a inverse Fourier transform (See Paragraph [0391]) and further teaches a unit for masking an impulse response (See Paragraph [0289]), is well known in the art.

16. It would have been obvious to one of ordinary skill in the art having the teachings of Sandahl and Mitchell Illbery before them at the time the invention was made to modify the device of Sandahl to further include a unit for implementing an inverse Fourier transform, and a unit for masking a impulse response for every transmitter from the summated impulse response. In order to obtain and impulse response of the incoming signals, the IFFT would need to be performed, secondly by masking the impulse response would remove the unnecessary portions from being used by the rest of the units for optimization. One or ordinary skill in the art would therefore have been motivated to make the modification to further include a unit for implementing an inverse

Fourier transform, and a unit for masking a impulse response for every transmitter from the summated impulse response.

17. Claim 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,689,808 by Sandahl et al., in view of US 2002/0122210 A1 by Mitchell Illbery, further view of US 2007/0036243 A1 by D'Amico.

18. Regarding claim 12, Sandahl teaches a device for monitoring the stability of the carrier frequency of identical transmitted signals of several transmitters of a single-frequency network comprising:

a receiver device (See Figure 1, [76]),

a unit for determining a transmission function (See Figure 1, [82]) of a transmission channel of several transmitters (See Figure 1, the sever transmitters being [50], [52] and [54]) of the single-frequency network to the receiver device disposed within the transmission range of the single-frequency network (See Column 3, Lines 20-48, "The receiver is located to receive the simulcast radio broadcasts"), but does not teach

a unit for determining a transmission function from pilot carriers of the received signal, and a unit for masking a impulse response for every transmitter from the summated impulse response.

Sandahl further teaches a unit for determining the phase characteristic of the impulse response for every transmitter (See Figure 1, [82], also see Column 4, Lines 6-14, "sending an adjustment signal to the network controller unit in response to the

detection of the phase difference between the timebase at the network monitoring unit and the timebase at the transmitter being monitored", thus the phase characteristics must be found first before finding the difference),

a unit for calculating the phase-displacement difference (See Figure 1, [82]) of the phase displacement of a transmitter relative to a reference transmitter at least at two different times and the carrier-frequency displacement of every transmitter relative to the carrier frequency of the reference transmitter (See Column 4, Lines 6-14, "sending an adjustment signal to the network controller unit in response to the detection of the phase difference between the timebase at the network monitoring unit and the timebase at the transmitter being monitored", where the adjustment signal is used to correct for the found "phase-displacement difference" of the received signals and the reference signal), but does not teach

a unit for presenting the calculated carrier-frequency (See Figure 1, [32], [34] and [36]) displacement of every transmitter relative to the carrier frequency of the reference transmitter of the single-frequency network (See Column 9, 54-61, "Using the phase-locked modulation Timebase as the reference for the radio transmitter synthesizer assures precise frequency control", where the NIUs use the signal to correct for the carrier-frequency displacement to each transmitters which was fed back via Line [88] in Figure 1), is well known in the art.

Mitchell Illbery teaches the knowledge of having a unit for masking an impulse response (See Paragraph [0289]), is well known in the art.

D'Amico teaches the knowledge of determining a transmission function from the pilot signal (See Paragraph [0028], "a device for the estimation of the transfer function of a transmission channel having both a pilot signal"), is well known in the art.

19. It would have been obvious to one of ordinary skill in the art having the teachings of Sandahl, Mitchell Illbery and D'Amico before them at the time the invention was made to modify the device of Sandahl to further include a unit for determining a transmission function from the pilot signal, and a unit for masking a impulse response for every transmitter from the summated impulse response. There are finite amount of ways to determining a transmission function, one would be from the set of pilot signals, and one would be motivated to try. Secondly by masking the impulse response would remove the unnecessary portions from being used by the rest of the units for optimization. One or ordinary skill in the art would therefore have been motivated to make the modification to further include a unit for determining a transmission function from the pilot signal, and a unit for masking a impulse response for every transmitter from the summated impulse response.

20. Claim 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,689,808 by Sandahl et al., in view of US 2002/0122210 A1 by Mitchell Illbery, further view of US 4,959,872 by Imai et al.

21. Regarding claim 13, Sandahl together with Mitchell Illbery taught the device of claim 11, as described above, but do not teach wherein:

the unit for presenting the calculated carrier-frequency displacement of every transmitter relative to the carrier frequency of the reference transmitter comprises a tabular and/or graphic display device.

Imai teaches the knowledge of displaying to a user via a display the calculated frequency displacement (See Column 15, Lines 53-62, "display device for indicating the offset frequency is provided"), is well known in the art.

22. It would have been obvious to one of ordinary skill in the art having the teachings of Sandahl, Mitchell Illbery and Imai before them at the time the invention was made to modify the device of Sandahl and Mitchell Illbery to further include the unit for presenting the calculated carrier-frequency displacement of every transmitter relative to the carrier frequency of the reference transmitter comprises a tabular and/or graphic display device. There are finite amount of ways to convey the frequency displacement, one would be to have a graphic display device, this would be obvious to try since it is easy to use by most people even not skilled in the art. One or ordinary skill in the art would therefore have been motivated to make the modification to further include the unit for presenting the calculated carrier-frequency displacement of every transmitter relative to the carrier frequency of the reference transmitter comprises a tabular and/or graphic display device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Stevens whose telephone number is (571)270-3623. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BS/
/Brian J. Stevens/

/David C. Payne/
Supervisory Patent Examiner, Art Unit 2611